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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/781,131

02/17/2004

David Tsang

2948P

3101

7590

02/09/2005

SAWYER LAW GROUP LLP

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Palo Alto, CA 94303

EXAMINER

LE, TOAN K

ART UNIT

PAPER NUMBER

2824

DATE MAILED: 02/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/781,131

Applicant(s)

TSANG, DAVID

Examiner

Toan Le

Art Unit

2824

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 2/17/04.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☒ Other: East search history.

DETAILED ACTION

Information Disclosure Statement

1. This office acknowledge receipt of the following items from the Applicant:
Information Disclosure Statement (IDS) filed on February 17, 2004.
2. Information disclosed and list on PTO 1449 was considered.

Specification

3. Claim 6 objected to because of the following informalities:
In claim 6, line 2: "element" should be -- elements --.
Appropriate correction is required.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1-3, 5-11 and 13-17 are rejected under 35 U.S.C. 102(e) as being anticipated by Cross (US. 6,649,960).

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Regarding claims 1-3 and 5-8, Cross discloses in Figs. 2-4, a magnetic memory comprising a plurality of magnetic elements, each of the plurality of magnetic elements including a free layer (18'), a spacer layer (16); and a plurality of ferromagnetic reference layers (14), each of the plurality of reference layers coupled with a corresponding portion of the plurality of magnetic elements (see fig. 3) and functioning as a portion of a pinned layer (see col. 1, lines 29-32) and as a write line for the corresponding portion of the plurality of magnetic elements (see figs. 2 and 3). Furthermore, Cross discloses each of the plurality of magnetic elements being magnetic tunneling junction (see fig. 3); the spacer layer (13) being a tunneling layer (see fig. 3) and resided between the free layer and the reference layer (see fig. 3); and a plurality of isolation devices (24) for the plurality of magnetic elements. Also, Figs. 3 and 4 show the width of each of the reference layers (14) being the same as the width of each of the magnetic elements (18'); each of the plurality of magnetic elements (18') having a soft ferromagnetic layer (22 consisting of CoFe, see col. 4, lines 39-41) which is resided between the spacer and the reference layer (see fig. 3); and the free layer (18') having first and second ferromagnetic layers (22, 26), and a nonmagnetic spacer layer (24) resided between the first and second ferromagnetic layers wherein a first magnetic vector in the first ferromagnetic layer and a second magnetic vector in the second ferromagnetic layer are antiparallel (opposite direction) (see fig. 4).

Regarding claims 9-11 and 13-17, the apparatus as described above would perform a method for providing magnetic memory as recited in claims 9-11 and 13-17.

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6. Claims 1-5, 8-13 and 17 are rejected under 35 U.S.C. 102(e) as being anticipated by Sharma et al. (US. 6,538,920).

Regarding claims 1-5 and 8, Sharma et al. disclose in Figs. 5-13b, a magnetic memory comprising a plurality of magnetic elements, each of the plurality of magnetic elements including a free layer (11), a spacer (13); and a plurality of ferromagnetic reference layers (17), each of the plurality of reference layers coupled with a corresponding portion of the plurality of magnetic elements (see fig. 7) and functioning as a portion of a pinned layer and as a write line for the corresponding portion of the plurality of magnetic elements (line 64 of col. 9 to line 2 of col. 10 and see fig. 7). Furthermore, Sharma et al. disclose each of the plurality of magnetic elements being magnetic tunneling junction (see col. 5, lines 12-13); the spacer layer (13) being a tunneling layer (see col. 10, lines 33-36) and being resided between the free layer (11) and the reference layer (17); and a plurality of isolation devices (43 of fig. 12) for the plurality of magnetic elements. Also, Figs. 6 and 10e show the width of each of the reference layers being less than or the same as the width of each of the magnetic elements.

Regarding claims 9-13 and 17, the apparatus as described above would perform a method for providing magnetic memory as recited in claims 9-13 and 17.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

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Bhattacharyya et al. (US. 6,740,947) disclose a MRAM with asymmetric cladded conductor.

Rizzo et al. (US. 6,351,409) disclose a MRAM write apparatus and a method of programming.

Monsma et al. (US. 6,269,018) disclose a MRAM using current through MTJ write mechanism.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Toan Le whose telephone number is (571) 272-1872. The examiner can normally be reached on M-F (8.00AM - 5.30PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Elms can be reached on (571) 272-1869. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

TL
February 2, 2005



RICHARD ELMS
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